Evaluating the Use of Web Conferencing Software to Enhance Flexible Curriculum Delivery

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Abstract

This paper summarises the findings from a small-scale pilot project investigating the potential of web conferencing systems to enhance flexibility in the delivery of the curriculum in blended learning courses. The current literature on the use of virtual classrooms is reviewed and the affordances and limitations of web conferencing systems are closely examined. Reasons why the case study research methodology was adopted are then explained. Feedback from both staff and students has been gathered, analysed and discussed; lessons learnt during the pilot are also discussed and a structured approach for the successful implementation of these systems is proposed. The paper is then concluded.

1. Introduction

One of the main objectives of the University's Strategic Development Programme is to enhance flexibility in the delivery of the curriculum offering some courses that can be studied in a blended mode of delivery. Web conferencing systems would possibly increase students' engagement with their courses – especially in blended learning courses with minimum face-to-face contact and distance learning courses. A student cohort of adult, part-time learners studying for a postgraduate qualification has been identified as the most suitable group for this pilot; this student cohort is comprised by working professionals in full-time employment; they have minimum physical presence on campus: 10 residential weekends per year. They also get access to a Virtual Learning Environment where they can access learning resources and discuss module-related issues with other members of their cohort using discussion forums, but until now no provision for synchronous group communication had been made outside their residential weekends.

Staff and students of the Jan 2010 cohort have been given training on the use of the web-conferencing system (Adobe Connect Pro) prior to the commencement of the pilot. They were introduced to the system in their introductory residential weekend and they were also given an introductory session on how to use the system remotely, the first time they accessed it.

Qualitative data have been gathered from staff via an interview and a focus group; students were e-mailed a link to an online questionnaire - with qualitative questions as well - in order to evaluate their experience. Following a literature review and explaining the methodology that was followed for data gathering, these findings are analyzed and discussed; points for consideration are then raised and the paper is concluded.

2. Background

Recent technological advances have made online communication and collaboration possible not only in asynchronous but also in synchronous modes. The literature on ways that emerging technologies can be used to enhance learning is full of promises [1] [2] [3]. At the same time, there are those who are skeptical about educational technology, thinking that at best it is only an alternative to conventional methods of teaching [4]. Synchronous ways of communication such as web conferencing systems are anticipated to reheat the whole debate. Web conferencing systems – or else, 'virtual classrooms' – are the digital version of a classroom meeting; they allow a geographically dispersed group of people to 'meet' synchronously online and communicate using a text chat, talk using a microphone or headset and display their face provided they have a camera connected or embedded to their computer. In a similar fashion to a classroom setting, the tutor/facilitator can initiate the session, give his/her input using both audio and visual input; they can display a presentation that they narrate using the microphone and share files or share their computer screen with the group. Furthermore, there is a whiteboard facility for attendees to write/draw notes, and also a breakout room facility where participants can be divided in smaller groups.

Web Conferencing software has been developed by many companies over the last decade: Adobe Connect Pro [5], DimDim [6] , Elluminate Live [7], Microsoft Live Meeting [8], Webex [9] and Wiziq [10] are only some of the systems used by various Universities and training organisations worldwide.

Universities that offer open and distance learning courses have been the pioneers in the use of these systems [11] [12]; however, recent competition among campus-based Universities to increase their number of students that study in a distance and/or blended mode have opened the market to many traditional, campus-based Universities in the UK and worldwide. Despite of the fact that many Universities have been lately investing a lot of resources on piloting web conferencing systems, at the time of writing there are only few case studies available on the web reporting on the integration of these systems in blended and distance learning courses.

A web conference system (Elluminate Live) has been trialled by the University of Queensland, Australia, a University with a large number of students studying in a distance learning mode. Undergraduate students studying mathematics who piloted the software found the shared whiteboard facility very useful for mathematical exercises [13]. Postgraduate students in Education who also piloted the software valued the interactivity and the opportunities for collaboration and they felt that the virtual classroom enhanced their social presence and their sense of community [13]. Some members of staff who participated in the same project expressed their concerns of being constantly beginners in their use of technology for teaching as new software always becomes available and they have to constantly catch up with new developments; furthermore, they expressed the need for the tools to be supported at University level and staff training to be available on both the pedagogical and technical aspects of the web conferencing software [13].

Another pilot study [14] reported that some students initially lacked confidence when they first used a web conference system (Elluminate Live), but their perception changed as they started getting more familiar with its use; it would appear having overcome the initial apprehension students engaged with the new technology very positively. Many students commented on how connected the program made them feel to the lecturer and other students [14]. Two main points became apparent from that study: first, students need clear information about the virtual classroom sessions and how to use the software; second, lecturers who are quite familiar with the environment can deliver more engaging classes and increase students' confidence in the use of the software [14].

Wang and Hsu [15] found that the virtual classroom experience was comparable to that of a face-to-face session; the webinar tool approximated the face-to-face environment and strengthened the social presence of all participants. This case study also underlined the need for both lecturers and students to familiarize with the software prior to the commencement of the project [15].

All three pilot studies mentioned above have recognized the potential for web conferencing to enhance the students' learning experience by creating an online community, which is a critical factor for networked learning [16] 'where the production of meaning is a collaborative activity involving connecting people and resources' (Parchoma in press, 18). However, what becomes also apparent from these pilot studies is the importance of staff and student training on how to use the software.

Web Conferencing software has also been used for online seminars [17] [18] and even for remote participation to Conferences [19]; the term 'webinar' is a neologism coined to describe a seminar that takes place on the web. Web Conferencing software tends to work well for this type of events as they are open to all interested members, they are usually a one-off or a series of autonomous sessions and participants join as they wish. There is also potential for web conferencing to be used for a guest lecture where a class is gathered in a lecture theatre for instance and a guest lecturer gives his presentation remotely using a web conferencing system in real-time; attendees can then pass their questions to the moderator who is typing or narrating them to the presenter in the end.

The use of the web conferencing systems for informational webinars is quite different from the more structured use as a virtual classroom integrated in the curriculum; in the former case it is optional/additional, can be a one-off or can be hosted and facilitated in the class; in the latter case students need to be more actively involved and connect to the system from their home/office at regular or irregular hours. This study focused on the potential of web conferencing to be integrated in the curriculum in a systematic way; the methodology followed is explained next.

3. Methodology

This paper follows the interpretive, naturalistic paradigm, as the focus is on interpretation rather than quantification of the web conferencing experience. The virtual classroom experience is seen as multi-layered and has to be studied in total rather than in fragments for a sound understanding to be reached. All entities involved in the project were in a state of a mutual shaping and the attribution of meaning was constantly evolving. A holistic approach was adopted in the research that looked for an interpretation of total phenomena rather than a limited number of variables [20].

The limited number of participants - five members of staff (three lecturers, one learning technologist and an e-learning support officer) and 13 students - prevent the findings from been generalizable; however, the in-depth findings could

inform the University's strategy on ways that the use of virtual classrooms could be integrated in other courses delivered in a blended or distance learning mode. The findings might also be of use to other Institutions considering the systematic integration of web conferencing in their curricula.

Case study was found to be the most appropriate research methodology for this exploratory pilot project. According to Yin [21]

> A case study is an empirical enquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident (2003, 13).

As this was a pilot project that aimed to test a specific piece of software in context, the exploratory case study research methodology was employed; the main area of interest was learning through the use of the virtual classroom. According to Meriam [22], a case study methodology is used when the researcher seeks to gain an in-depth understanding of a particular situation.

One of the main criticisms of the case study as a research strategy is that cases are not necessarily representative [20]. The authors accept that fact; however, case study was found to be the most appropriate research strategy on this occasion as this was an in-depth rather than an in-breadth study; furthermore, the small number of participants and the nature of the study allowed themselves for qualitative, naturalistic research. Despite the fact that the findings from this research are not quantifiable or generalizable they can still be of use to those who are thinking to integrate the virtual classroom in their teaching.

Qualitative data were gathered via a variety of methods such as a focus group, an interview and online questionnaires. Furthermore, observation techniques were employed in the live online sessions. Although evaluation from participants took place in the end, feedback was gathered throughout the duration of the project.

An online focus group was run for staff members who participated in the pilot project; a separate interview was held with one member of staff that could not make the focus group.

Both staff and students were asked to describe their overall experience with the web conferencing system from a technical, practical and educational point of view, reflect on which aspects they had found useful, and mention ways that could possibly further improve the experience; the potential usefulness of recordings for later on-demand access was questioned as well. Furthermore, staff were asked whether their teaching methods had changed as a result of using the web conferencing system.

3.1. Data analysis

Data were analyzed inductively, with constructs deriving from the data during the research. Data were hand-coded and the following categories were applied to them:

- Technical Issues
- Student attendance
- Training needs
- Potential software uses
- Session planning
- Session recordings
- Session duration
- Potential of breakout rooms

Data from various sources – focus group, interview, open ended questionnaires - were triangulated on the same categories and are presented in the results. Connections between this case study, its findings, and previous research are made in the discussion.

4. Results

Staff and student feedback is reported separately in the following sections.

4.1. Staff feedback – themes

The following themes emerged from the staff focus group and the interview:

Initial technical issues: It took some time until all students sorted out how to use their microphones; sound problems also occurred as some students did not use their headsets but relied on their computers' speakers, which resulted in echoing and background noise. Microphone rights had to be given in turns because when many participants were given microphone rights simultaneously, sound was problematic. However, once these problems were sorted, the system worked well.

Two ways of using the software emerged from the pilot: presentation/lecture with questions in the end or tutorial discussions. As this was an exploratory pilot study, lecturers experimented with various ways of using the software; they used it for typical presentations with questions and answers in the end, but also used it for discussions with students about coursework and for tutorial discussions. In the end of the pilot however, they realized that there is a need to decide from the beginning which way they will be using the software if they want to make it a formal

requirement for students to engage with virtual classrooms in the future.

Student attendance: Due to the fact that this was a pilot study and lecturers were experimenting with its use, although the time - Sunday evening - of the sessions were negotiated with students, dates sometimes became available only a week or two in advance of the sessions. This resulted in limited participation from students: out of the 13 students only between four and seven of them participated in each session. All three lecturers agreed that if they wanted to emphasize the use of the virtual classroom, they have to make it part of the programme and include it in the timetabled sessions.

Potential of using breakout rooms in the future and its limitations: one of the areas for future exploration as mentioned by two lecturers was the breakout room facility. That would allow them to divide students in smaller groups and give them a task to discuss. However, they recognized the need to familiarize themselves with this function first.

Training needs for lecturers and students: lecturers agreed that there is a need for training for both staff and students before they start using the software. This is crucial for the virtual classroom to be used effectively according to all three of them.

Virtual session planning: apart from the time lecturers need to spend learning the software, staff recognized the need to pre-plan in great detail how they are going to spend their time online. When asked whether the use of the software had changed their teaching methods they stated that whilst the basics involved are similar with face-to-face teaching - ie. a set of slides narrated to achieve a number of learning objectives - the experience is very different. One of them (P1) stated:

> It was difficult to judge the mood of the audience, partly because they (the students) were not used to the system and therefore did not know how to give feedback.

Another one (P2) added:

> I believe that the sessions will have to be planned out in far more detail. Will probably ask them (the students) to do some pre-reading but will need to make sure that they all do the work before the session.

Session duration: all three lecturers agreed that the optimum duration of each online session is approximately one hour; one member of staff (P1) stated that even half hour sessions could be appropriate on some occasions and another one (P2) added that one-and-a-half hours would be the maximum length for each session.

Benefits from recordings: lecturers acknowledged that students might benefit if recordings became available after the sessions; however, they were aware of the possible disadvantages of such a decision: students might not come if they know that the session will be recorded and available afterwards (P1, P2). They might also feel embarrassed to participate if they know that the session is recorded (P3). One of the lecturers (P3) stated that the disadvantages are more than the advantages regarding session recordings.

4.2. Student feedback – themes

The following themes emerged from the students' online questionnaire:

Attendance: students' overall experiences with the software varied widely; it is noteworthy that despite them agreeing on the most suitable time for the online sessions, many of them would still not attend; out of the 13 student participants each session was attended by only between four and seven of them; however, they were not the same people each time as each one of the 13 participated in at least one of the eight sessions that ran throughout the duration of the project.

Technical issues: out of the seven students who took the online questionnaire, five found it relatively easy to use the software; however, two participants stated that it took them some time to make their microphones work. Spending too much time on sorting out audio issues (technical issues) resulted in some sessions spending almost half the time trying to make the system work. Furthermore, despite of the fact that students were given an introductory training session on campus followed by instructions and an online introduction to the software in order to familiarize themselves with its use and set up their headsets, some students were still struggling to make their microphones work in subsequent sessions. This pilot made it clear that in spite of the fact that the software allows for up to six people to have microphone rights simultaneously, in order to achieve optimum sound only the facilitator and the presenter should have microphone rights throughout the session; participants can request microphone rights on demand at any point during the session.

Virtual session planning: students recognized the potential of the web conferencing system to enhance their learning experience, if used in a structured way. There is a need for a clear session plan so that the system is used effectively, according to the students. Students recognized the potential of the software to enhance their learning and claimed that some of the sessions had done so. Sessions need to be timetabled well in advance; the format of the sessions (lecture/presentation, discussion, tutorial) needs to also be aforethought.

Benefits from recordings: students asked only recordings from presentations but not from discussions to be made available afterwards. They mentioned that the recording facility of the software could be beneficial on some occasions; they claimed that they could possibly gain from a recorded structured presentation; the value of the recording would be limited in tutorial discussions as they would not have the chance to participate.

5. Discussion

Taking into account that this was an exploratory pilot project, the project was successful. However, it raised important issues for consideration before making the virtual classroom an integral part of a course/programme.

Despite the fact that findings from this case study are not generalizable, some areas for consideration can be proposed to anyone who is thinking to integrate web conferencing in their teaching; first of all, training for both staff and students who will have to use the software is critical; students' training initially can involve access to the software and overcoming any technical problems; for staff it extends to the functionality of the software and ways that it can be used pedagogically. Furthermore, if sessions are regular, they have to be timetabled in advance as the synchronicity can cause inflexibility, especially to working professionals. Session planning is also a prerequisite as the system allows for no or little improvisation; virtual classroom sessions need to be very structured as it is not easy to detect the mood of the audience and change accordingly. Finally, whether recordings of the sessions would enhance learning if made available afterwards, seems to be debatable and needs to be negotiated with the students.

The virtual classroom can become a platform to foster the creation of online communities of practice [23] and can support interactions among the members of a learning community; synchronous communications can also blend with other asynchronous forms of online communications – such as discussion forums – in order to provide a rich learning experience. However, as it becomes apparent from this pilot study and the literature review, synchronous communications require a lot more effort for their successful implementation than their asynchronous counterparts. This is mainly due to the higher training needs required for all participants, plus the time inflexibility imposed by the synchronous nature of the online sessions.

6. Conclusions

Web conferencing systems are now becoming more common and have been adopted by many HEIs worldwide [11] [12]; however, before they become part of the curriculum, there needs to be a lot of thought on how they are going to be used, especially if they are to become an integral part of a programme or course.

There seems to be a gap in the literature in some aspects of virtual classrooms; although a lot has been written about initial pilot studies, or about best practice in webinars (web seminars) and guidelines for synchronous e-learning using virtual classrooms are available, a detailed web search on case studies written about a course or programme that has successfully integrated regular use of the virtual classrooms in its curriculum beyond the pilot phases returned no results.

This pilot study showed that lecturers need a lot of training in order to be totally comfortable with the use of the web conferencing software; furthermore, it can sometimes take students a lot of time before they sort out their microphone and audio issues. More importantly, as these sessions take place in out-of-office hours - weekday evenings/weekends – they need to be timetabled well in advance for students to attend and well-planned in order to be worthwhile. As Palloff and Pratt [2] acknowledge, the use of synchronous media should be judicious; as their synchronous nature imposes some inflexibility in the course delivery, their use needs to be wise and careful.

7. References

[1] MacDonald, J., *Blended Learning and Online Tutoring.* 2nd ed. Gower Publishing Limited, Aldershot UK, 2008

[2] Palloff, R., and K. Pratt, *Building Online Learning Communities: Effective Strategies for the Virtual Classroom*, Josey Bass, San Fransisco, 2007.

[3] Salmon, G., *E-tivities: the key to active online learning,* Kogan Page Limited, Abingdon, 2002.

[4] Biggs, J., *Teaching for Quality Learning at University,* Open University Press, Buckingham, 2003.

[5] Adobe Connect Pro http://www.adobe.com/products/acrobatconnectpro/ (Access date: 10 Sep 2010).

[6] DimDim http://www.dimdim.com/ (Access date: 11 Jun 2010).

[7] Elluminate Live http://www.elluminate.com/Products/Elluminate_Learning_Suite/Elluminate_Live!/?id=79 (Access date: 12 Jun 2010).

[8] Microsoft Live Meeting http://office.microsoft.com/en-us/live-meeting/ (Access date: 10 Sep 2010).

[9] Webex http://www.webex.co.uk/ (Access date: 10 Sep 2010).

[10] Wiziq http://www.wiziq.com/ (Access date: 11 Sep 2010).

[11] Lehmbeck, C., Using Versatile Web Conferencing Technology. Campus Technology website, 2009. http://campustechnology.com/articles/2009/01/14/using-versatile-web-conferencing-technology.aspx (Access date: 03 Feb 2011).

[12] Bentley, K., and S. Collins, The Evolution of web Conferencing. EDUCAUSE Evolving Technologies Committee,2007. http://www.educause.edu/Resources/TheEvolutionofWebConferencing/162098 (Access date: 04 Feb 2011).

[13] S. Reushle, and B. Loch., "Conducting a trial of web conferencing software: Why, how, and perceptions from the coalface", *Turkish Online Journal of Distance Education*, 2008, vol. 9, no. 3: article 2.

[14] Vitartas, P., S. Rowe, and A. Ellis., Students' first experiences with a web conferencing system, 2008. http://ausweb.scu.edu.au/aw08/papers/refereed/vitartas/paper.html (Access date: 01 Mar 2011).

[15] S.K. Wang, and H.Y. Hsu, "Use of the webinar tool (Elluminate) to Support Training: the effects of webinar learning implementation from student-trainers' perspective", *Journal of Interactive Online Learning*, 2008, vol. 7, no. 3: pp.175-194

[16] Parchoma, G. Toward diversity in researching teaching and technology philosophies-in-practice in e-learning communities. In *Handbook of Research on Methods and Techniques for Studying Virtual Communities: Paradigms and Phenomena*, ed. B. Daniel, 1-25. Hershey, PA, IGI Global, 2010.

[17] ALT Open Access Repository. Webinar Recordings and Materials, 2010. http://repository.alt.ac.uk/view/divisions/freshlook/2010.html (Access date: 15 May 2011).

[18] JISC RSC Eastern, Web 2.0 Webinar, 2010. http://info.rsc-eastern.ac.uk/events/event_details.asp?eid=760 (Access date: 10 Sep 2010).

[19] Blended Learning Conference, University of Hertfordshire, Virtual Conference Attendance, 2010. http://www.herts.ac.uk/about-us/learning-and-teaching/learning-teaching-institute/conferences/blended-learning-conference-2010/virtual-conference-attendance.cfm (Access date: 10 Sep 2010).

[20] Cohen, L., L. Manion, and K. Morrison, *Research Methods in Education.* 6th ed., Routledge, Oxon, 2007.

[21] Yin, R. *Case Study Research: Design and Methods*, 3rd ed., Sage Publications, Thousand Oaks, 2003.

[22] Meriam, S. B., *Qualitative research and case study applications in education*, Josey Bass, San Fransisco, 2001.

[23] Wenger, E., *Communities of Practice: Learning, Meaning and Identity*, Cambridge University Press, Cambridge, 1998.